

APPENDIX C

RESPONSIVENESS SUMMARY

Bitterroot Valley Sanitary Landfill
State Superfund Facility

Ravalli County, Montana

January 2002



A Proposed Plan (PP) was released in September 2001 describing the Department of Environmental Quality's (DEQ's) preferred alternative for the Bitterroot Valley Sanitary Landfill (BVSL) facility. A public comment period was held from September 4, 2001 to October 3, 2001. On September 18, 2001 a public meeting was held to present DEQ's preferred alternative to the public and a public hearing to receive public comment was held during the second portion of the meeting. DEQ received oral comments from five people at the public hearing. DEQ also received written comments from five individuals or organizations during the public comment period. All comments received are contained in DEQ's Administrative Record.

DEQ strongly believes citizens of Montana, especially residents living near Superfund facilities who will be most affected by agency decisions, should have the opportunity to be actively involved in the decision-making process. DEQ has made every effort to involve the community, including local officials and residents, in all aspects of the investigation and cleanup, and has conducted community involvement activities for the BVSL facility in accordance with state law.

DEQ maintains an in-state toll-free number (1-800-246-8198) for people who want to contact DEQ about BVSL or other Superfund facilities. The toll-free number is answered in person during business hours. In addition, DEQ maintains a website (<http://www.deq.state.mt.us>).

DEQ maintains a private mailing list for the BVSL facility that is periodically updated. DEQ has actively solicited additions to the mailing list in progress reports and at public meetings. In accordance with state law, the mailing list is generally not released to the public.

In accordance with § 75-10-713, Montana Code Annotated (MCA), DEQ provided notice of the public comment period and public meeting and hearing in the Ravalli Republic and Missoulian newspapers on the PP for the BVSL facility on September 4, 2001. DEQ also sent fact sheets prior to the public meeting and hearing to everyone on the BVSL facility mailing list, including the Ravalli County Commissioners. An article concerning the BVSL facility and the PP was on the front page of the Ravalli Republic on September 4, 2001. KPAX-TV aired a story about the BVSL facility and PP on September 6, 2001 on the 5:30 p.m. and 10:00 p.m. news. The public meeting and hearing were held on September 18, 2001 at the Victor Public School. The 30 day public comment period ran for the PP from September 4, 2001 through October 3, 2001.

All comments received have been reviewed and considered by DEQ in the decision-making process and are addressed in this Responsiveness Summary. The comments below are stated verbatim. To assist in developing responses, similar comments are usually addressed only once for the first occurrence of the comment and thereafter referenced to the appropriate response.

RESPONSES TO ORAL COMMENTS

Comments from Judith Ann Bisom:

My name is Judith Ann Bisom. I'm at 86 Rockland Lane. We're right on the corner of 93 and Rockland Lane. According to all the maps, we evidently are just outside of the area and it is my understanding that we can be forced to be on this even though our water has been tested good. And I guess my comment is when we first heard of the water problem in 1991, we were told that it would take large quantities of this contamination over a period of 70 years that could possibly do harm to us. Now, my question is, our water is – and I know you're trying to think of our

welfare and you're trying to, you know, be concerned for us. But if our water is testing good and three months later it is contaminated, I feel at that point we can say, all right, we will be on the community water system. I am concerned of being forced on it when we don't have to and to start paying that \$15, \$20 a month. When at this point we don't have to and I feel we shouldn't have to until the time is needed. So that is my comment.

Response:

DEQ is required to ensure that the current and future residents' and workers' health is protected. Some wells that are not contaminated today have the possibility of being contaminated in the future. If a well is inside the proposed controlled groundwater area (CGWA), the pumping of that well may affect plume expansion. The pumping action may expand the plume by drawing contaminated water toward it to the point that the well becomes contaminated. All residences and businesses within the facility boundaries as defined in the Record of Decision (ROD), the 35 gallon per minute pumping buffer zone boundary of the proposed CGWA (see Appendix F), or with existing deep replacement wells will be required to connect to the community water supply system (CWSS).

Although a fee for use of water provided by the CWSS will be required, that fee will be determined by the water users' legal entity. Residents currently pay for water in different ways. There is an electricity cost associated with running a pump to pump water out of a well. If the pump in a well fails or the water needs treatment, the homeowner must pay for the replacement or for the pump to be fixed or for the treatment system. With a CWSS, if a pump fails or treatment is required, the money residents pay monthly should cover any maintenance problems so no additional money is required.

Comments from Lorin Lowry:

I'm Lorin Lowry. I live at 139 Pine Drive, new to the area. I lived there for, what, less than a year, so it's kind of a new issue for me, unlike some of you folks who have been here much longer. My affiliation again is I do work in an official capacity as the Director of Public Works for the City of Hamilton which does involve management of their public water system. I would really formally like to go on record as supporting the concept and understanding that the immediate plume issue, the chloroform issue, but there are other issues that reside in the valley as well in other forms of contamination that are beginning to be of concern throughout the whole valley.

The only real way to protect, I think is the best word, the individual community or water user is through arbitration and good management of a water system. Individually, I don't believe that any of us, myself included, do a very good job of that on our own as far as the other issues that are at hand here.

I would also like to offer myself. I would like to offer, volunteer to maybe possibly work in the capacity of some sort of steering committee if this ensues to offer community input to the evolution of some sort of system so that hopefully it will be designed, built in a good manner that serves the community. Thank you.

Response:

DEQ appreciates support for the CWSS and will involve Mr. Lowry in developing the CWSS legal entity. To ensure the CWSS will be designed and built in a proper manner, the CWSS design must meet the requirements of DEQ's public water supply section.

Comments from Dale Fowler:

My name is Dale Fowler. I live at 137 Pine Drive and I have lived there for about four years now. I continuously have problems with the water system, with the iron mostly and I'm sure most of you do, too. I'm in favor of this proposal. One of my concerns would be the proper installation, make sure it was done properly and make sure we're not crossing each other's property line with, you know, proper installation of the whole system.

Also, I have another concern is, you know, we are talking 15, 20 bucks a month for each individual payment to do this. If you take \$20 a month for 20 people, that's \$400. That's not much to maintain and repair, maybe put in a new pump that can cost 2, 3, \$4,000. I think that needs to be looked at very carefully before we make this decision.

I still feel that there is some obligation with the people that started this whole system, or started the whole problem. I don't think they should be let off. I'm not trying to stick these people with this full cost. I realize we need to pay, you know, for our water system, I understand that. But I don't feel that the Rocky Mountain Lab or these other people that were involved in this issue way back should be let off totally. That's my feeling. Thank you.

Response:

DEQ appreciates support for the CWSS. The design of the CWSS will be reviewed by DEQ's public water supply section to ensure it meets all requirements. DEQ will ensure that NIH requires the construction contractor provide an appropriate warranty to the legal entity warranting workmanship and that the CWSS is free from material defects. The period of the warranty shall be one year from the date DEQ issues a Certificate of Completion for the CWSS (DEQ 2000). The one year warranty period will give the water users legal entity time to accumulate money for future operation and maintenance. Appendix E of the ROD is a detailed analysis of the sampling requirements of DEQ's public water supply section and the costs associated with annual sampling.

DEQ is not letting NIH or any other parties involved "off the hook." In April 1997, DEQ filed a complaint in the Montana First Judicial District Court against Ribí, BVSL, Inc., and Charles Mann. In April 1998, DEQ signed a consent decree with Charles Mann and BVSL, Inc. wherein these parties settled their liability with the State by paying \$34,500 and agreeing to provide access to landfill property and to implement, maintain, and comply with ICs. The parties also received contribution protection under CECRA for matters addressed in the settlement. On May 5, 1998, the First Judicial District Court signed the consent decree and it became effective.

In April 1998, the United States (US), on behalf of NIH, filed a complaint in the US District Court for the District of Montana, Missoula Division, against Ribí, BVSL, Inc., Charles Mann,

and Mary Louise Mann. DEQ intervened as a plaintiff in that lawsuit against the US and Ribí. In March 1999, the US signed a consent decree with Charles Mann, Mary Louise Mann, and BVSL, Inc. wherein these parties settled their liability with the US by paying \$440,000. The parties also received contribution protection under CERCLA for matters addressed in the settlement. This consent decree was lodged with the District Court and was subject to a 30 day public comment period. On May 28, 1999, the District Court signed the consent decree and it became effective.

In November 2000, the US and DEQ signed a Settlement Agreement wherein the US settled its liability with DEQ by paying \$15,000 and agreeing to implement and/or fund the final remedy selected by DEQ. NIH also received contribution protection under CERCLA for matters addressed in the settlement. Also in November 2000, the US and DEQ signed a consent decree with Corixa wherein Corixa settled its liability with the US by paying \$2.2 million and with DEQ by paying \$450,000 for past and future remediation costs. The consent decree was lodged with the District Court and it, along with the settlement agreement, were subject to a 30 day public comment period. On January 26, 2001, the District Court signed the consent decree and it, along with the settlement agreement, became effective. In addition, NIH has fully funded several investigations, the source removal action, pump and treat system, installation of the deep domestic wells, and maintained the individual treatment systems on those wells, spending between \$5 and \$5.5 million.

Comments from Hilliard Betancourt:

I would like to say something. My name is Hilliard Betancourt. I live at 167 Pine Drive. I have to agree with Mr. Fowler about NIH having responsibility for more than just paying the up-front cost. Because someone brought up when we were having discussions what if something happens in the first year of installation and we don't have all this money accumulated in this fund, the people who are there ultimately are going to be stuck with this responsibility which we weren't the ones to begin with who were responsible for this. I understand that we have to pay for this water system and I agree, you know, but then again we don't know, this is all speculation, 15, 20. It could be 50, 60, 70. Who knows how much really the cost is going to be a month. Us as the homeowners I guess in layman's term are going to be caught holding the buck for something a bigger entity should be responsible for. That's pretty much all I have to say. Thank you.

Response:

Please see previous response to Dale Fowler comments.

Comments from Nanette Morozumi:

I don't have it filled out yet, but I will comment on it. Yeah, I'm Nanette Morozumi. I live at 138 Rockland Lane. We are outside the buffer zone and the plume contamination at this time. We are just south of it, however. My concern, one, is what's going to happen after the 10 years. Who is going to be responsible for hooking this up? And I certainly have to agree with the two gentlemen before me on I think that the state and/or the National Institutes of Health should provide maybe a monthly fee, a start-up fee or something instead of leaving it all up to the homeowners to provide for some buffer zone in case of problems. I think that's it.

I'll add this, too. Again, I would want to have some provision for hooking up to – possibly hooking up to instead of just inside the house, possible irrigation as part of this county water system to provide for such things as the swimming pools and other outside recreational activities. Thank you.

Response:

For several years before the pump and treat system began, the plume boundary remained fairly constant. When the pump and treat system began operation, the plume boundary slightly decreased. Once operation of the pump and treat system is terminated, any plume expansion is expected to occur in a relatively short period of time. DEQ does not believe the plume will expand past its original boundary before the pump and treat system began operation. As explained in the ROD, if the plume expands within ten years after the later of the termination of the pump and treat system or the issuance of the Certificate of Completion for the CWSS, NIH will be responsible for connecting newly impacted residents and workers to the CWSS. If the plume expands after this ten year period, DEQ will connect newly affected water users who are in compliance with ICs utilizing funds provided by the potentially liable persons (PLPs).

In response to the comment about NIH providing a start-up fee, please see the previous response to Dale Fowler comments. The Agency for Toxic Substance and Disease Registry (ATSDR) recently completed a health consultation for DEQ pertaining to the use of contaminated water for outdoor swimming pools. ATSDR determined that the exposure would not be expected to result in adverse health effects, even if the owner chlorinates the pool. ATSDR evaluated the risks of inhalation, dermal contact and incidental ingestion (ATSDR 2001a). Since no risks are associated with using the water for outdoor swimming pools, it is not necessary for an outdoor spigot to be connected to each property from the CWSS. If the commenter wishes to have an outdoor spigot connected to the CWSS, the commenter may be able to install one at the commenter's own cost.

RESPONSES TO WRITTEN COMMENTS

Comment from unidentified meeting attendee:

General. How is the public to choose without knowing the details/limitations of the Community Water Supply?

Response:

The PP is only a brief summary of the alternatives studied during the hydrogeologic characterization and feasibility study. The PP contains the key factors that led DEQ to identify the preferred alternative. Because the preferred alternative may not be the final selected alternative in the ROD, only limited details are provided. The ROD provides additional detail.

The CWSS will consist of a well field, treatment facilities, storage tank, distribution lines and laterals to the affected properties. The system will be designed to have a reserve capacity of 30% for unscheduled maintenance, unscheduled outages and short-term growth. The system will be designed for future growth, although new residences and businesses will be responsible for their own hook up. Water supply wells, treatment and storage facilities will be designed to provide

minimum operating pressure of 35 pounds per square inch to each of the properties to be included. NIH is not required to design the CWSS to provide fire flow. A legal entity must be formed to own and operate the CWSS. The legal entity will be responsible for the CWSS's long-term operation and maintenance. The legal entity will establish water users fees. An indepth description of the selected alternative is contained in the ROD. Additional design criteria will be contained in the CWSS design workplan that will follow the ROD.

Comments from John and Karen Wallace #1:

My family and I live on Rockland Lane in Victor Montana. Our address is 76 Rockland Lane. We have just been informed by our neighbors that the Mt.DEQ has recently had a meeting regarding the installation of a public water supply system for the residents of Rockland Lane and Pine Drive.The reason for this proposal was the contamination of our groundwater with the chemical CHLOROFORM-- CHCL3. In May of 2000, we had heard through our neighbors, that Rocky Mountain Laboratories had dumped chloroform in an old landfill west of Rockland Lane. We called the DEQ and spoke with John Constan and he told us "that the state had test wells in the Rockland lane area and that no contamination had occurred in the Rockland lane wells". We were told that you were the person representing the DEQ regarding this issue. Could you please, e-mail us with answers to the following? 1. Is this true that the DEQ is involved with this issue? 2. What is the reason, that the DEQ feels we need a public water supply? 3. Is the DEQ requiring all residents of Rockland Lane and Pine Drive to be on this public water supply system? 4. Why were we not notified of this public meeting? 5. Has there been final engineering plans drawn up for this supply system and what are the costs' involved with each resident of this area? When we purchased our property we tested our wells for bacteria, and nitrates, we have never tested for "chloroform". We were never told about this contamination when we purchased our property, and since, we spoke with Mr. Constan we still have not tested for chloroform because of his representation that no contamination had been found. Do we need to test our wells for chloroform immediately? If so, who do we need to contact to have this procedure done? I thank you for your assistance in this matter and if you need any further information from us please contact us at [address, phone number, and email address deleted].

Response:

1. Is this true that the DEQ is involved with this issue?

Yes, DEQ is the department overseeing activities at the BVSL facility. The DEQ was involved prior to the BVSL becoming a CECRA facility. DEQ was involved because landfill regulations are handled in DEQ's solid waste program. DEQ's hazardous waste program has also been involved in previous years. The DEQ Remediation Division (CECRA) has been involved since 1991.

2. What is the reason that the DEQ feels we need a public water supply?

DEQ is required to select a remedy that protects human health in the long term. A CWSS reduces the unacceptable risks to human health posed by drinking contaminated groundwater by providing a source of clean water for current and future residents and workers. Currently the shallow groundwater is contaminated with chloroform, methylene chloride, tetrachloroethene, and vinyl chloride which exceed federal and state standards and presents an unacceptable risk to

current and future groundwater users. The deep domestic wells have high iron and manganese levels, which exceed EPA maximum contaminant levels and Montana's water quality standards for groundwater, and have caused staining on porcelain, clothing and hair. These deep wells currently have treatment systems on them, but individual treatment systems are not a long-term remedy because other problems are associated with treatment systems such as bacteria growth and maintenance problems. When maintenance has not occurred on a regular basis, breakthrough has occurred and larger amounts of iron are allowed through the filter which leads to more staining. Proper maintenance has proven difficult to implement. Please also see response to Judith Ann Bisom comments.

3. Is the DEQ requiring all residents of Rockland Lane and Pine Drive to be on this public water supply system?

Please see previous response to Judith Ann Bisom comments.

4. Why were we not notified of this public meeting?

In accordance with § 75-10-713, MCA, DEQ provided notice of the public comment period and public meeting and hearing in the Ravalli Republic and Missoulian newspapers on the PP for the BVSL facility on September 4, 2001. An informational handout was sent out in a mailing to everyone on the mailing list, including the Ravalli County Commissioners. An article concerning the BVSL facility and the PP was on the front page of the Ravalli Republic on September 4, 2001. KPAX-TV aired a story about the BVSL facility and PP on September 6, 2001 on the 5:30 p.m. and 10:00 p.m. news. DEQ has added the commenter to its mailing list so that they receive future mailings regarding the facility.

5. Has there been final engineering plans drawn up for this supply system and what are the costs involved with each resident of this area?

Engineering plans have not been drawn up for the CWSS. NIH will begin the design phase after the ROD is issued. The remedial design will provide additional details for the construction of the CWSS. The costs involved for each resident for the construction and connection to the system will be nothing. NIH will pay for construction of the system and connection to each current home or business in the affected area. The only cost for the residents will be a water bill that will pay for operation and maintenance of the system and required Safe Drinking Water Act monitoring. Once the system is constructed, it will be turned over to the residents and they will own it. A water users' legal entity will be set up to run the system. The legal entity will determine what the costs will be to the water users. Please also see response to Judith Ann Bisom comments.

6. Do we need to test our wells for chloroform immediately?

DEQ is currently requiring NIH to sample all wells it believes are currently at risk from contamination at the facility. At this time, there is no need to sample the commenter's well for chloroform.

Comments from John and Karen Wallace #2:

As per our telephone conversation on September 26, 2001, please enter the following information as "Official Comment" in regards to the possible construction of a community water supply system for Rockland Lane and Pine Drive, Victor, Montana.

****Please note that our property at 76 Rockland Lane has two water wells that are both used for residential purposes (showers, drinking, etc.)****

I understand that at this current time, we are unaware if our property with our wells will fall in to your "buffer zone" and will be included in the community water system.

The concerns that we would like to see addressed in the decision of the DEQ in regards to this matter are as follows:

1. We use our existing wells for the watering of livestock, family pets, and vegetable gardens, aside from irrigation and normal residential use. In addition, we have a 4 year old daughter that plays in the water outside throughout the summer. Not only does she run through the sprinkler, but has a swimming pool that we fill directly out of our well. If we understand this contamination problem accurately, when water is ran out of the hydrant into a tub of some sort (whether it be watering animals or filling a swimming pool) the contaminant DOES NOT dissipate. If this is true, then the contaminate (specifically chloroform) could be absorbed through the skin. I am sure this would not be healthy for my animals to drink either, since their internal organs would be susceptible to this contaminate also.

SOLUTION: Install one frost free hydrant per residential well when this new community water system is installed to use for these purposes. (In our case where both of our wells serve for residential use, this would mean two new hydrants on our property). This would alleviate the problem of absorption of contaminants through the skin or drinking of contaminated water by any animals.

2. From what I understand, the companies liable for this contamination will put aside \$100,000 to be used for any legal fees that will need paid in addition to setting up a "water owners association". This is great, but we DO NOT feel this is enough. We are not the one that contaminated our water supply in the first place, so why should we have to pay to have a pump replaced in one of the community wells? One pump for these wells could cost upwards of \$10,000. As a water owners association, with each household paying approximately \$20 a month, it would take two to three years of the accumulation of dues to purchase just one pump! And there could possibly be three wells with two pumps in each?

SOLUTION: Setting up a community well system will save these companies millions of dollars in future costs. They could set up a fund to maintain these wells (new pumps and the like) for a period of 30 years. This would still save them money in the long run and keep our drinking water safe. Maybe by that time, the water association would have enough money set aside to take over the maintenance and operating costs of this system.

Thank you for listening to the concerns of our household and considering them in your decision on what to do with this project.

Response:

1. Please see previous response to Nanette Morozumi comments.
2. DEQ will ensure that NIH requires a one year warranty from the construction contractor to cover workmanship and that the CWSS is free from material defects for one year (DEQ 2000). Once the CWSS is built, it will be owned and controlled by the legal entity so DEQ

believes it is appropriate for long term operation to be turned over to the legal entity. NIH will set aside \$100,000 to set up the legal entity and acquire necessary property ownership and any money left over will be provided to the legal entity to assist with costs associated with the CWSS (DEQ 2000). Please also see previous response to Dale Fowler comments.

Comment from John and Jimalee Taylor:

Please add our name to the list of people that's down for Community Water. From the Victor Landfill.

Response:

DEQ appreciates support for the CWSS.

Comments from Jim Carscadden, National Institutes of Health

This letter is in response to the Proposed Cleanup Alternative for the Bitterroot Valley Sanitary Landfill State Superfund Facility as proposed by the Montana Department of Environmental Quality (MDEQ) in the Proposed Plan (Plan) dated September 2001 and published by the MDEQ for public comment.

The NIH's response actions at the Bitterroot Valley Sanitary Landfill (BVSL) have been a long and an extremely complex project in many aspects and it is one which probably has no precedent in the United States. As such, we fully understand the difficulty in assembling all of the data which is present in the Administrative Record and the difficulty in compiling that data to present it in a concise and understandable format. The Plan is perhaps the first such presentation intended primarily for public consumption. NIH believes that every logical and reasonable effort has been taken to remediate the groundwater contamination at the site and therefore questions some of the conclusions reached by MDEQ with regard to earlier and interim actions. We understand, however, that the complexity of the site makes differing interpretations of available data possible.

When the entire area presently affected by the plume of contamination and its potential subdivision is considered, the NIH agrees with MDEQ that Alternative 4, the Community Water Supply System (CWSS) coupled with Institutional Controls (ICs), is the preferred alternative for final remediation of the BVSL.

In general, we are concerned that the Plan lacks detail and documentation about the alternative actions, particularly the preferred alternative. The Plan does not provide the residents affected by the CWSS with sufficient background and information on the proposed CWSS. Details such as its tentative service area, capacity, procedures for its development, design and construction, and the responsibility and cost for its Operation and Maintenance are not fully or adequately explained in the description of Alternative 4. We are concerned that the absence of this information may affect the ability of the affected residents to fully understand the burdens and benefits associated with the CWSS and to come to an informed conclusion regarding the final remedial action.

NIH appreciates the opportunity to comment on the Plan and remains willing to provide MDEQ information that may be helpful. If you have any questions regarding NIH comments, please do not hesitate to contact me at [phone number and email address deleted].

Response:

DEQ appreciates support for the CWSS. Please also see previous response to unknown meeting attendee comment.

Comments from Maxim Technologies, Inc.

We reviewed the document referenced above and agree with the Montana Department of Environmental Quality's (DEQ) preferred action for the site. However, because DEQ's Proposed Plan is a part of the administrative record for the site, we are providing the following comments for your consideration and response. The comments presented herein are based on Maxim's interpretation of data collected since 1989 and we understand that others may interpret the data differently. Our comments are organized based on section and page number of DEQ's Proposed Plan, dated September 2001.

General Statement

- Throughout the document, it would be helpful to refer to the specific phases of contamination (e.g., aqueous, non-aqueous, adsorbed and vapor) being discussed since each phase exhibits different behaviors.

Response:

DEQ does not believe it is necessary to refer to specific phases of contamination throughout the ROD. Where reference to a specific phase is helpful, DEQ has included it.

Facility Background, History, p. 6

- DEQ states that the facility boundary is based on the 1 µg/L chloroform isopleth and also describes geographic boundaries (e.g., Westview Drive). The groundwater system is dynamic and remedial efforts are modifying the geometry of the interpreted plume, so it is important to state the date the interpretation is based on. It would be helpful to mention the potentially transient nature of the facility boundary.

Response:

The PP will not be revised, but the ROD clarifies that the BVSL facility boundaries encompass the BVSL historic waste disposal pit and any place where hazardous or deleterious substances have come to be located, including the areas containing the plume of contamination of chloroform at a level in excess of 1 microgram per liter in groundwater. The ROD also mentions the transient nature of the facility boundary (i.e., "[t]he facility boundary changes as the plume changes").

Plume Description, p. 6

- DEQ states that some of the liquid waste “sank quickly” when it was dumped into the pit and entered groundwater. Please explain the basis for this statement.

Response:

Because the materials under the landfill are sands and gravels (Huntingdon 1993) which are porous, DEQ believes the liquid waste “sank quickly” compared to if the material were less porous. Liquid also tends to migrate quicker than a more viscous or solid material. EPA guidance states, “For a sufficient volume, DNAPL can reach a relatively deep water table in days to weeks, as opposed to years” (Cohen and Mercer 1993).

- DEQ uses a figure to describe what they believe happened at BVSL. Reports of source area investigations conducted by NIH (on file with DEQ) indicate that chloroform probably did not migrate much past the water table. Based on data collected at the site, Maxim believes there are not pools of DNAPL at the site.

Response:

The figure DEQ used in the PP is a general graphic representation of subsurface DNAPL contamination and is not facility specific. DEQ is not inferring there are DNAPL pools at the facility; however, DEQ does believe globules or ganglia of DNAPL may be present in the area of the historic waste disposal pit. The presence of globules or ganglia of DNAPL is supported by Appendix A, Figure 8.

Hydrogeology, p. 7, 1st paragraph, 5th sentence

- Unit B Well D-39 has also exhibited detectable chloroform.

Response:

The PP will not be revised, but the ROD reflects contamination in well D-39.

Hydrogeology, p. 7, 1st paragraph, 7th sentence

- Wells BR-GW-63DD, -65DD and -73DD are completed in Unit C.

Response:

The PP will not be revised, but the ROD clarifies the completion of these wells in Unit C.

- Well BR-GW-84D has become a replacement domestic well and is completed in Unit B.

Response:

The PP will not be revised, but the ROD clarifies the use and completion of this well.

Investigations, p.7

- The department states that the Hydrogeologic Characterization and Historic Waste Disposal Pit Investigation were conducted in February 1993 and October 1993. These dates are inaccurate. The reports DEQ references provide the dates when the investigations were actually conducted.

Response:

The PP will not be revised, but the ROD reflects the report dates.

- This section does not adequately document the investigations that were conducted by NIH between 1992 and 2001. The reader could assume that only two investigations were conducted (7 and 8 years ago), and/or that results of these two investigations are the only reports in the administrative record that are being considered by DEQ.

Response:

The other reports of investigations are discussed in other sections of the PP. The PP will not be revised, but the ROD clarifies the investigations completed to date.

Interim Remedial Actions, p. 8, 1st paragraph

- The dates of the three IRAs listed in the first sentence are inaccurate. For instance, the Phase IIA system was not activated until July 1998 and the first replacement domestic well was not installed until 1995.

Response:

The PP will not be revised, but the ROD corrects these inaccuracies.

Interim Remedial Actions, p. 8, 3rd paragraph

- The dates referred to are inaccurate.

Response:

The PP will not be revised, but the ROD corrects these inaccuracies.

Interim Remedial Actions, p. 9, 1st complete paragraph

- In the second sentence, DEQ states that the system (we assume the Phase IIA system) was not designed to collect contaminated water from the deeper portion of the shallow aquifer. Wells R-4D, R-6D, and R-8D were installed in 1997-98 and were specifically designed to pump contaminated water from the deeper portion of the shallow aquifer (deeper portion of Unit A). However, well R-9D was added in 2000 to recover groundwater from the deep portion of Unit A near the source area.

Response:

The PP will not be revised, but the ROD clarifies the location and purpose of the wells.

p. 9, 3rd full paragraph

- The third sentence implies that the shallow plume west of Highway 93 has not been captured. It should be changed to “However, only the plume west of Highway 93 has been captured.” The plume downgradient of Highway 93 in the deep portion of Unit A continues to attenuate and migrate toward the Bitterroot River.

Response:

The PP will not be revised, but the ROD clarifies the plume locations.

Contaminant Distribution, p. 9, last paragraph

- Unit B well D-39 has also exhibited detectable chloroform.

Response:

The PP will not be revised, but the ROD clarifies well D-39 also exhibits detectable chloroform.

- Maxim believes that the aquitards are discontinuous sedimentary features but do not contain cracks.

Response:

The PP will not be revised, but the ROD clarifies the aquitards are discontinuous sedimentary features.

Cleanup Action Objectives, p. 12, 1st paragraph

- According to Maxim’s 1996 Interim Remedial Action Soil Removal and Treatment Construction Oversight Report, though the majority of contaminated soil was excavated and treated, some remained on the south and east margins of the excavation.

Response:

The PP will not be revised, but the ROD clarifies that the chloroform concentrations remaining in the soil ranged from <0.005 milligrams per kilogram (mg/kg) to 0.108 mg/kg. DEQ uses EPA’s soil screening levels (SSLs) to determine if further action is warranted. DEQ has determined that a dilution attenuation factor of 10 is appropriate for Montana based on soil and climate conditions. Thus, DEQ uses the SSL and adjusts it by the DAF to determine the appropriate screening level. The confirmation soil samples were all below the adjusted SSL of 0.3 mg/kg.

Evaluating the Alternatives, p. 13, 2nd paragraph

- At the request of DEQ, NIH prepared and submitted an amendment to the draft Final Feasibility Study. This document should also be referenced.

Response:

The PP will not be revised, but the ROD considers the amendment and includes relevant information from the document.

Evaluating the Alternatives, p. 13, 3rd paragraph

- We believe this paragraph is inaccurate and may be misleading. Evidence suggests that very little non-aqueous phase (DNAPL) chloroform remains in the subsurface. Therefore, only chloroform in aqueous phase and adsorbed to organic carbon in the aquifer matrix is currently contaminating the aquifer. Maxim estimates that at the present less than 300 lbs. (137 kg) and approximately 30 lbs. (14 kg) of chloroform remain in aqueous and adsorbed phases, respectively, for a total of approximately 330 lbs. (151 kg) within the study area. Between July 2000 and June 2001 the Phase IIA system removed approximately 30 pounds of aqueous phase chloroform from the aquifer (about 10% of the remaining mass). These data and observations appear to suggest that groundwater removal and treatment is technically feasible for removing chloroform from the aquifer.

Response:

On July 26, 2001, DEQ requested that NIH calculate the estimated chloroform mass left in the groundwater system. On July 30, 2001, NIH responded, stating it “believes it to be almost impossible to determine the remaining mass because of the many variables involved” (DEQ 2001b). DEQ has difficulties relying on Maxim’s calculations because they contradict the previous statement by NIH, who hired Maxim. Therefore, although DEQ does believe the pump and treat system removed 30 pounds of aqueous phase chloroform from the aquifer between July 2000 and June 2001, DEQ does not know with any certainty the remaining mass of contaminant in the groundwater system.

Evaluating the Alternatives, p. 13, 4th paragraph

- Improvements to VOC groundwater quality in well BR-GW-9 since the implementation of the Phase IIA system is both a result of the Phase IIA system and natural attenuation.

Response:

DEQ agrees that both interim actions and natural attenuation, including Phase IIA, have resulted in improvements to groundwater quality. The ROD clarifies that DEQ will review future monitoring data to verify the effectiveness of natural attenuation.

p. 15, 2nd paragraph

- It appears that this paragraph is based on inaccurate assumptions. It suggests that approximately 1,150 kg (2,540 lbs.) of chloroform remain in the subsurface. This contrasts markedly with the estimated 151 kg thought to remain in the aqueous and adsorbed phases. Maxim's interpretation of available data suggests the mass of non-aqueous chloroform remaining in the aquifer is relatively small. Given our estimate of chloroform remaining in the aqueous and adsorbed phases provided above (151 kg or 330 lbs.), and evidence suggesting the mass of non-aqueous and vapor phase chloroform is relatively small, it appears that less than 15% of the mass reportedly disposed of remains in the subsurface. Maxim attributes the difference between the reported mass released and the estimated mass remaining to interim remedial actions and natural attenuation.

Response:

Please see response to comment concerning Evaluating the Alternatives, p. 13, 3rd paragraph.

- Maxim disagrees with the statement that pump-and-treat has no effect on contaminants trapped in the soil matrix. If DEQ's statement refers to non-aqueous phase chloroform trapped in the soil matrix, we believe that the mass is relatively small (as we have stated). This is further based on chloroform concentrations observed in July 2001 (see Figure 6 of the Proposed Plan) in wells less than 100 feet downgradient of the source (<60 µg/L). If there is additional non-aqueous phase chloroform in the saturated zone, the pump-and-treat system is increasing the rate it is dissolving by increasing the gradient and therefore groundwater velocities within the source area. If the statement refers to chloroform trapped in the soil matrix by adsorption, the pump-and-treat system is reducing that mass by reducing the concentration of aqueous-phase in the surrounding pore water.

Response:

DEQ recognizes the benefits and limitations of pump and treat systems in addressing contaminated groundwater plumes. Based upon assessments by various experts at sites similar to BVSL, it is likely that the laboratory solvents disposed of in the pit migrated through the subsurface to the saturated zone. It is also very likely that residual solvents remain trapped as globules or ganglia in the vadose and saturated zones by various mechanisms. According to Pankow and Cherry, residual solvents are "extremely difficult to displace by hydraulic means alone" and indicate that residual solvents "may not always be directly accessible to flowing groundwater." This results in dissolution becoming diffusion limited. Pankow and Cherry also say that "this results in an inherently slow mass transfer process and is often the cause of the well-known tailing phenomenon observed in remediation efforts." In the vadose zone, residual solvents may move into a vapor phase that can transfer contaminants directly to the groundwater or to infiltrating water (Pankow and Cherry, 1996). DEQ agrees that the pump and treat system is having some affect on residual solvents in the saturated zone. However, with the exception of R-9D, DEQ believes that the system is approaching the tailing phenomenon based upon the chloroform concentrations observed in recovery/interception wells (Maxim 2002) thereby, limiting the system's effectiveness (Appendix A, Figure 9). Since it was activated in March 2000, well R-9D has contributed approximately 55% - 71% of the total chloroform removed (Maxim 2002). According to Maxim's most recent report (Maxim 2002), "all recovery wells are

exhibiting a decreasing trend in chloroform concentrations. Therefore, the system's annual chloroform recovery rate is also decreasing." DEQ does not believe the pump and treat system has any affect on removing residual solvents that may remain in the vadose zone.

Please refer to response to Evaluating the Alternatives, p. 13, 3rd paragraph regarding the remaining mass of chloroform.

Alternative 2, p. 16, 2nd paragraph

- The first two sentences of this paragraph are repeated in similar form on pages 17, 18, 20, and 21. DEQ refers to the source removal action in various ways:
 - ...reduced the further contamination... (p. 16)
 - ...prevented the further contamination...(p. 17)
 - ...reduced the further contamination ... (p. 18)
 - ...eliminating any further contamination...(p. 20)
 - ...reducing further contamination...(p. 21)

Please clarify the reference to the source removal action on these five pages.

Response:

From the information in the Soil Removal and Treatment Construction Oversight Report, DEQ has determined that the source removal action reduced further contamination to groundwater. DEQ uses consistent language in the ROD.

- Hydrogeologic data contained in the administrative record suggest that it is highly unlikely that chloroform will affect water quality in Units C and D. Wells completed in Unit D are protected by upward gradients with 30 to 40 feet higher hydraulic head than affected wells completed in Unit B. The 3rd and 4th aquitard units and numerous other fine-grained lenses also hydraulically protect Unit D. Replacement wells completed in Unit C (BR-GW-63, -65DD and -73DD), while at relatively greater risk of contamination due to their closer proximity to the chloroform-affected portion of Unit B, are protected by both the 3rd aquitard and upward gradients.

Response:

Although it may be unlikely that chloroform will affect water quality in aquifer units C and D, there is only limited data to support that belief and the aquifer system below the BVSL facility is very complex. It is possible that if more deep wells are installed fairly close to each other, the accumulating affect on the aquifers might differ from today. Maxim also stated in other comments on the PP that the aquitards are "discontinuous sedimentary features." DEQ agrees that these aquitards are discontinuous, which may lead to contamination from the upper units spreading to units C and D.

Alternative 3, p.17, 1st paragraph, 1st sentence

- Results of an aquifer test in well R-8D suggest that the Phase IIA system affects flow in Unit B (refer to the administrative record). The Phase IIA system also intercepts aqueous

phase chloroform from the deep portion of Unit A thereby preventing further transport of chloroform to Unit B.

Response:

DEQ does not believe the pump and treat system is preventing the further transport of chloroform to unit B. The two wells with detectable chloroform levels in unit B are D-39 and BRGW-61DD, both of which are located far east of Highway 93. Since 1994, BRGW-61DD has shown an increasing trend in chloroform concentrations.

Alternative 3, p.17, 3rd paragraph

- In the first sentence, clarification on the date is needed. Soil was removed in 1993, treated in 1993 and 1994, and replaced in 1994.

Response:

The PP will not be revised, but the ROD clarifies the dates of specific activities associated with the soil removal action.

- Maxim disagrees with the 8th sentence in this paragraph. While the Phase IIA system may have only removed 5% of the total mass of chloroform reportedly released in the ground, it has removed a much larger percentage of the chloroform that remained in the subsurface after 1998. Since 1998 chloroform concentrations have dropped by 2 orders of magnitude in wells such as BR-GW-36D, BR-GW-82D and R-9D. These improvements in groundwater quality are directly attributable to the Phase IIA pump-and-treat system.

Response:

The eighth sentence states that “areas of the plume have already migrated past the point at which the pump and treat system can capture the contaminants, which gives the contaminants a chance to reach some deep domestic wells.” DEQ is referring to the deep portion of unit A east of Highway 93 depicted in Figure 7 of the ROD. Based upon information presented in Maxim’s reports, DEQ does not disagree that the pump and treat system has contained the plume in the upper portion of unit A. However, the pump and treat system does not collect all contaminated groundwater from east of Highway 93 and DEQ believes its statement in the PP is correct.

For clarification, based upon the information presented in Figure 9 of Phase II Groundwater Remediation System – Second Quarter 2001 Operation & Monitoring Report, August 2001, R-9D concentrations have decreased by one order of magnitude, not two as indicated in the comment.

Alternative 4, p.17, 1st paragraph, 2nd sentence

- While the relative effectiveness of the Phase IIA system may be subject to debate, it has removed about 50 kg of chloroform since 1998.

Response:

DEQ has included a discussion regarding chloroform removal in the Facility History and Enforcement Activities section of the ROD.

Alternative 4, p.18

- Maxim suggests that the first paragraph include the reference for the statement that irrigation with contaminated water at current concentrations does not present an unacceptable risk to human health or the environment.

Response:

The PP will not be revised, but the ROD references the Health Consultation prepared by the Agency for Toxic Substance and Disease Registry.

- Maxim believes that iron and manganese treatment of a CWSS may be necessary due to the pervasive presence of these elements in groundwater in the Bitterroot Valley.

Response:

Treatment may be necessary for the CWSS but treatment will not need to be done on an individual basis. The CWSS would have one treatment system being overseen by a certified operator. The ROD clarifies that prior to establishing the CWSS, groundwater will be analyzed to determine its suitability for domestic use.

The Preferred Alternative, p. 20

- In Item 1, please note that highly contaminated soil was removed in 1993, not 1994.

Response:

The PP will not be revised, but the ROD reflects the correct date.

The Preferred Alternative, p. 21

- Will the ERCLs analysis be included in the Record of Decision?

Response:

Yes. The ERCLs can be found in Appendix G of the ROD.